ORIGINS TECHNOLOGY SUMMARY

REQUIRED CAPABILITY		PERFORMANCE GOALS					TECHNOLOGY OPTIONS			
DESCRIPTION	PRIORITY	METRICS	UNITS	SIM	NGST	TPFA	DESCRIPTION	SOA	LIMIT	DEMO?
Pathlength Control and Actuators (primary segment phasing for NGST)	High	range	mm	2000	6	10	**Multi-Stage Delay Lines**			ground test
		accuracy	nm	0.2	50/1?	0.2	• piezo vernier stage			cryo
		jitter during slew	nm	10	?	10	• voice coil middle stage			
		operating temperature	K	280?	30	35	• motor drive on track outer stage			
		bandwidth	Hz	100	< 1	100	range	20 mm stroke	TBD	
		heat dissipation	mW		very low	very low	accuracy	1 nm acc	TBD	
		hysteresis		?	low	?	jitter during slew	5 nm jitter	TBD	
							operating temperature	293K	TBD	
							bandwidth	500 Hz BW	TBD	
							heat dissipation	low	low	
							Mag-Lev Delay Line			ground test
							range	TBD	TBD	cryo
							accuracy	TBD	TBD	
							jitter during slew	TBD	TBD	
							operating temperature	TBD	TBD	
							bandwidth	TBD	TBD	
							heat dissipation	TBD	TBD	
							Air Bearing Delay Line			ground test
							Multi-Stage Segment Phasing			ground test
							• vernier stage- needs cryo development			cryo
							- magnetostrictive			
							- electrostrictive			
							- piezoelectric			
							• lead screw for outer stage			
							range	1.5 mm	> 6mm	
							accuracy	25nm	<10nm?	
							jitter during slew	TBD	TBD	
							operating temperature	293K	TBD	
							bandwidth	< 1Hz BW	TBD	
							heat dissipation	TBD heat	TBD	

Optical Pathlength Control & Phasing